KYNatural Resources and Environmental Protection Cabinet

Land Air&Water magazine

Fall 2002
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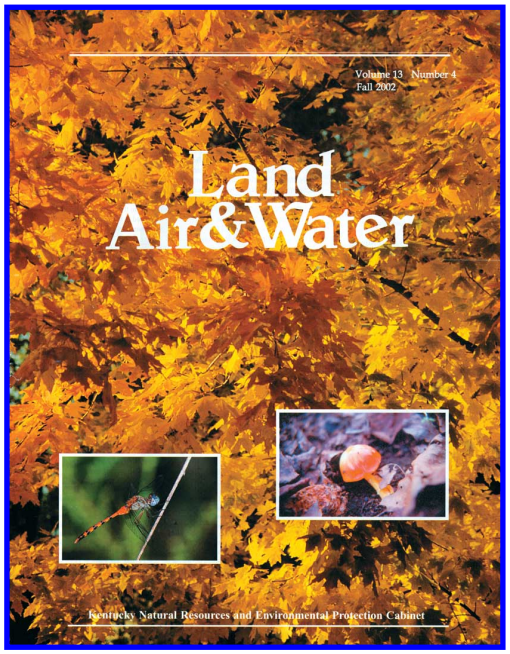

Cover of the Fall 2002 issue
Read about the cover photos.

Land, Air & Water is a quarterly publication focused on the Kentucky Natural Resources and Environmental Protection Cabinet's work to preserve and protect Kentucky's land, air and water resources. Contact the editor, Cindy Schafer (e-mail cynthia.schafer@mail.state.ky.us) to add your name to the mailing list or to change a current listing.

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Updated: Oct. 8, 2002

Progress planned for cleanup at Paducah Gaseous Diffusion Plant

by Mark York, Office of the Secretary

Following a series of top-level meetings between the state, the Department of Energy (DOE) and the Environmental Protection Agency (EPA), cleanup work at the Paducah Gaseous Diffusion Plant is now on a faster track.

A plan that calls for quick action on three specific areas has been forged after meetings between Jessie Roberson, assistant secretary for environmental management for the Department of Energy; Jimmy Palmer, regional administrator for the Environmental Protection Agency's Region 4; and James Bickford, secretary of the Natural Resources and Environmental Protection Cabinet.

The fast-track plan was prepared after DOE had submitted an Accelerated Cleanup Plan (ACP) to the state and the EPA. The Commonwealth and the EPA disagreed with the scope of the plan, as well as items that would have reduced regulatory oversight of cleanup at the plant.

Instead of pursuing the ACP, the parties agreed to focus instead on three specific cleanup items that could begin immediately:

- Removal of contamination from the North-South Diversion Ditch.
- Removal of scrap metal material.
- Remediating sources of groundwater contamination.

The three officials toured the plant in August and were briefed on various cleanup operations and challenges at the facility. Roberson, Palmer and Bickford have agreed to meet on a regular basis to ensure progress on the cleanup projects.

From 1952 to 1993, the Department of Energy operated the facility to enrich uranium. In 1993, the United States Enrichment Corporation (USEC) assumed enrichment operations through a lease agreement with DOE.

Plant operations introduced radioactive and hazardous chemical wastes, including technetium-99 and uranium and compounds such as trichloroethene. Some of the contaminants have moved off-site through underground plumes.

In 1994, the site was placed on EPA's National Priority List for the Superfund program.

During a visit to Paducah in August, Gov. Paul Patton indicated the cleanup of the facility was the top environmental priority of his administration.

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The Paducah Gaseous Diffusion Plant's C400 building is a major source of groundwater contamination.
Click on photo to see it enlarged.

(left to right) Secretary James Bickford, EPA Region 4 Administrator Jimmy Palmer, and DOE Assistant Secretary for Environmental Management Jessie Robertson are briefed on cleanup technology at the plant.
Photo courtesy of Greg Cook, Bechtel Jacobs Co. LLC.
Click on photo to see it enlarged.

A scrap metal yard on the plant's property.
Click on photo to see it enlarged.

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Bickford receives Caudill award

Sierra Club Cumberland Chapter members present Natural Resources and Environmental Protection Cabinet Secretary James Bickford with the Harry M. Caudill Award for his efforts to protect Kentucky's environment. (Left to right) Hank Graddy, James Bickford, Lane Boldman, Oscar Geralds and Betsy Bennett.
Photo by Kerry Holt.

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Bluegrass PRIDE officially under way

by Mark York, Office of the Secretary

More pride will be found in protecting Kentucky's environment after the second PRIDE program in the state was kicked off this summer. U.S. Rep. Ernie Fletcher, R-Lexington, and Secretary James E. Bickford of the Natural Resources and Environmental Protection Cabinet, officially introduced the program, which will serve 18 counties in central Kentucky.

PRIDE stands for Personal Responsibility In a Desirable Environment. The eastern Kentucky PRIDE program was started several years ago by U.S. Rep. Hal Rogers, R-Somerset, and Bickford for a 40-county area in eastern Kentucky.

The Bluegrass PRIDE program, modeled after the eastern Kentucky PRIDE program, will focus on the issues of illegal dumps, water quality, and environmental education and awareness.

"Kentucky is our home and we have been blessed with its natural beauty and bounty," said Fletcher. "Those who live and work here are not the only ones who appreciate the Bluegrass; we have thousands of others who visit each year."

Fletcher and Bickford announced the Bluegrass PRIDE program a year ago. Since then, Fletcher has secured two federal grants totaling nearly $1 million.

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"If we are to have a clean, safe environment in central Kentucky, it will take all of us working together," Bickford said. "Now we have a great opportunity to join forces to find creative solutions to these problems and protect the environment and beauty of this region."

To learn more about Bluegrass PRIDE, visit its Web site at **http://www.kentuckypride.com/**

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Panel announces recipients of small business awards

by Rose Marie Wilmoth, Air Quality Representative
Department for Environmental Protection

Two Kentucky small businesses were presented with 2002 Small Business Air Quality Stewardship Awards in October. The Air Quality Small Business Advisory Panel (Small Business Stationary Source Compliance Advisory Panel) established the award in 1997 to recognize small businesses that have gone above regulatory requirements to reduce the impact of their operations on air quality.

Natural Resources and Environmental Protection Cabinet Secretary James E. Bickford presented the awards during a luncheon at the Berry Hill Mansion in Frankfort, Kentucky. The award winners were:

- Gaddie-Shamrock Paving Quarries, Columbia and Albany
- Bedrock Products, Breckinridge County

Gaddie-Shamrock modernization program

Gaddie-Shamrock operates limestone quarries in Columbia and Albany. President Roy Beard describes the company's product as "limestone aggregate used for any kind of paving—from highway to driveway."

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Several years ago, the company decided to modernize its crushing and conveyor systems at both locations. The benefits of the modernization program include fewer emission points, improved safety conditions for employees, significant reduction in particulate matter emissions, improved productivity and improved company profitability.

Bedrock Products reformulates coating

Bedrock Products prepares limestone for decorative uses in construction. During an air quality assessment, the company discovered that its limestone coating contained glycol ethers that are considered hazardous air pollutants under the Clean Air Act. Bedrock Products worked with their supplier to reformulate the coating. Use of this pollution prevention technique eliminated the hazardous component, reducing air quality emissions and associated permitting techniques.

Foster Air Quality Stewardship

Both Gaddie-Shamrock and Bedrock Products foster the ethic of air quality stewardship that the panel wanted to recognize when it established the award six years ago. The 2002 winning nominations were submitted by employees of the Division for Air Quality and the Kentucky Business Environmental Assistance Program.

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A showcase cleanup

by Matt Hackathorn, Division of Waste Management

The Hazardous Waste Branch of the Kentucky Department for Environmental Protection is currently working on a high-profile cleanup project that combines multiple, creative methods designed to cleanse the environment of significant contamination.

The remediation at the long-closed Atkemix Ten Inc. in Louisville became a U.S. Environmental Protection Agency (EPA) Showcase Pilot for 2002 earlier this year. The 200-acre site is one of 31 across the nation that the EPA targeted as a model illustration of innovative cleanup under the Resource Conservation and Recovery Act (RCRA).

The Atkemix Ten site is the location of a former chlorinated chemical manufacturing plant that had been previously operated by Stauffer Chemical Co. It is located on Campground Road along the Ohio River. Stauffer operated the facility from the 1950s through the ’70s, processing raw materials like hydrochloric acid for corporations such as DuPont. Stauffer shut the operation down in the early 1980s, and Atkemix Ten acquired the site in 1987 as part of the sale of Stauffer Chemical.

Although the plant was demolished, the residue from nearly 30 years of chemical production, and the low environmental standards of the times, remained. Literally tons of chlorinated organics had been released into the environment. During the mid-1980s, Stauffer Chemical received a hazardous waste permit requiring the property to be entered into the RCRA Corrective Action Program in an effort to identify the nature and extent of the contamination. When Atkemix Ten acquired the property, the RCRA corrective actions activities continued. Atkemix Ten conducted a series of investigations under the federal EPA’s oversight to study the soil and groundwater and to develop a cleanup plan.

In 1996, Kentucky took the lead in regulating the cleanup. Armed with information relating to the geologic properties of the soil and groundwater underfoot, Atkemix Ten installed a groundwater extraction and treatment system in 1997 to control the groundwater migration from the former production area toward the Ohio River. The system consists of three extraction wells set into the outwash aquifer, an air stripper and a regenerable carbon filtration system.

"The treatment system is quite involved and innovative," said Hazardous Waste Branch Geologist and Project Manager Ahad Chowdhury. "The groundwater being extracted from under the site is piped to the air stripper, where it is treated and discharged into the Ohio River (in accordance with a Kentucky Pollution Discharge Elimination System permit). The stripped volatile organic compounds (VOCs) that remain are conveyed to the carbon system. A small boiler generates steam to remove the VOCs from the carbon, and the VOCs are sent to a storage tank to await transport for off-site disposal."

When the groundwater extraction system first began operations, the wells pulled more than 400 pounds of hydrocarbons out of the ground daily. Today, the same system gathers an average of 100 pounds per day. Since the groundwater extraction system began operating in 1997, more than 200,000 pounds of VOCs have been recovered.

In an effort to increase the amount of VOCs removed, a technological advancement was incorporated into the groundwater treatment plan —a technique called air sparging. This method involves shooting air into the groundwater, causing the VOCs to be removed from the groundwater, and then collecting the VOC vapors through at technique called soil vapor extraction. This second remediation system has operated since February 2002, and already more than 150,000 additional pounds of VOCs have been removed. The combined remediation systems are now removing approximately 1,500 pounds of contaminants daily. Atkemix Ten officials estimate that remaining contamination is now at about one-third of what it was when the remediation started.

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Kentucky DEP inspectors traveled to Louisville to learn more about the innovative cleanup going on at the Atkemix Ten Inc. site on Camptown Road. Here, regulators are looking an an air-stripping tower that treats contaminated groundwater. The building houses the carbon filtration units, where a steam-regeneration system separates contaminants for proper disposal.

Click on photo to see it enlarged.

In May, Kentucky DEP Inspector Cliff Hall looks at the soil vapor extraction vacuum pressure gauge and flow meter that was recently installed at the site.

Cabinet photos

Click on photo to see it enlarged.

"This is an aggressive use of various techniques to clean up a problem from the past," said Chowdhury. "We're very happy with the progress.

Eventually, the site will be much cleaner and a good prospect for redevelopment."

For more detailed information on the Atkemix Ten showcase pilot, visit the U.S. EPA Web site.

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Lead cleanup and investigation ongoing

by Matt Hackathorn, Division of Waste Management

In April, Sami White enthusiastically strolled out to her backyard to break ground on the first garden she and husband Matt would plant at their new home on Jones Lane in Junction City. But her efforts didn't uncover the rich, dark soil that all gardeners love to see in the spring. What White uncovered was a nightmare that has plagued a Boyle County community and sparked a million dollar cleanup by the federal Environmental Protection Agency (EPA) and the Kentucky Natural Resources and Environmental Protection Cabinet.

As she tilled the soil on that fateful spring day, White unearthed strange black chips that were later identified as old plastic car and truck battery casings. The chips were not just confined to one area of the White's backyard, but scattered liberally all over the new neighborhood development.

Curious about the foreign material and concerned for the safety of her now six-year-old child and infant baby, White and next-door neighbor Anetha Caldwell, also the mother of two small children, started making inquiries about the black chips. Their suspicions prompted a phone call to the Kentucky Department for Environmental Protection (DEP) and helped launch a major ongoing investigation and environmental cleanup. Both the Whites and Caldwells moved into their new homes in October of 2001.

The DEP quickly dispatched a team of investigators from the Superfund Branch to sample the soil. Initial results found lead levels as high as 4,000 parts per million (ppm) in the White and Caldwell yards along Jones Lane. Naturally occurring lead in central Kentucky soil is generally measured at less than 50 ppm. As expected, lead residue from the old batteries had clung to the soil, posing a potential threat to both human health and the environment.

"The Kentucky Natural Resources and Environmental Protection Cabinet is working on a detailed investigation to evaluate the history of the Jones Lane property to determine the parties responsible for spreading the battery casings," said Rob Daniell, director of the Division of Waste Management. "It appears that this material is widespread throughout the area. The casings were also apparently crushed and used as a bed for two unpaved roads in the residential development."

More than 30 people who live in the surrounding vicinity received blood tests in May and June to rule out the possibility of lead poisoning. Fortunately, all tests came back within normal limits. Elevated levels of lead, particularly in children, can cause mental problems such as learning disabilities, as well as other physical impairments.

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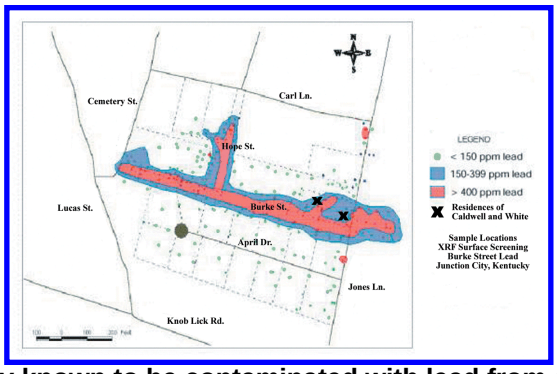
A backhoe is removing contaminated soil from the southwest corner of the site on Burke Street. This photo was taken from the backyard of 104 April Drive.

Click on photo to see it enlarged.



The neighborhood area in Junction City known to be contaminated with lead from old battery casings includes the length of Burke Street and part of Hope Street, which are unpaved, and seven residential lots that adjoin the two streets. In addition, high concentrations of lead battery casings were found in the undeveloped area across Jones Lane from Burke Street, where samples collected by the federal EPA show lead at levels around 90,000 ppm.

Click on photo to see it enlarged.

Photos by the Division of Waste Management

The DEP requested the assistance of the U.S. EPA to remove lead-contaminated soil and debris at the site. The EPA began cleanup activities at the site on Aug. 6 and expects to take approximately two months to excavate, treat and dispose of solid wastes.

The EPA standard for cleanup in residential areas is 400 ppm, but Kentucky's standard for lead cleanup is 50 ppm. Therefore, additional work needed to clean the site to Kentucky standards will be paid for with state funds.

The EPA temporarily relocated the White and Caldwell families at a local motel while the cleanup took place. The families were asked to relocate while the soil removal was being conducted due to safety issues relating to the use of heavy equipment at the site.

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Shattered market

by Matt Hackathorn, Division of Waste Management

For people who take conservation of natural resources seriously and recycle their household waste, the idea of a major recycling market bottoming out is quite disappointing. Unfortunately, the glass market seems to be doing just that across the nation.

Glass recycling is rapidly becoming a nonviable market due to the high cost of collecting, processing and transporting the material—with little or no return on investment for Kentucky recycling operations. Although thousands of resource-conscious citizens spend time each week sorting and separating their glass to return to industry, a downward economic trend over the last several years shows that glass manufacturers are either unable, or unwilling, to process recycled glass efficiently. In short, recovered glass has continued to pile up until it has become virtually worthless.

Many factors contribute to the problem. Bottlers say it's cheaper for glassmakers to use raw materials such as sand and soda ash than to use cullet (scrap glass that has been cleaned and crushed for reuse). However, cullet uses less energy during the melting process than sand and soda ash, which would likely save the industry money. Glass container manufacturers currently use only about 30 percent recycled glass to make bottles, meaning the number of bottles being made is at least three times the total that could be recycled. Many communities understandably do not want to discontinue glass recycling; so large inventories accumulate at recycling centers and manufacturing plants, driving the cost of glass as a commodity down.

In addition, since glass is heavier and more fragile than counterpart materials like aluminum and plastic, manufacturers over the years have steadily abandoned glass as a packaging alternative, which drives up the cost of manufacturing glass containers.

"Many of the nation's larger glass manufacturers have closed large portions of their operations, and at least one has filed for Chapter 11 protection," said Tom Heil, who heads the Kentucky Recycling and Marketing Assistance (KRMA) program for the Kentucky Department of Environmental Protection (DEP). "Cullet processing and additional transportation costs add too much expense to keep glass recycling in the same ball park with plastic and aluminum."

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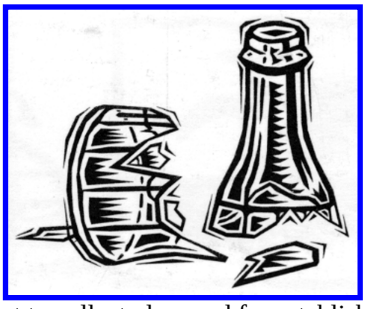

Heil advises start-up community recycling operations not to collect glass and for established recycling programs to look closely at the alternatives before continuing to accept it. "Glass collection has become detrimental to the overall collection of recyclables in some cases," Heil said. "Many recycling programs in Kentucky can be a profitable, or at least a break-even proposition, for local communities, but right now the glass market is neither."

According to Heil, the best way for the broken glass market to repair itself is through the development of alternative markets. Many states use recycled glass in such applications as landfills (as daily cover), septic filters, sand blasting, glasphalt, trench filling and landscaping. The KRMA program is looking into the feasibility and effectiveness of small economical pulverizer equipment for use at local recycling operations, (e.g. city government, county programs and private industry). Pulverizing machines can create different grades of glass aggregate (from granular size to five-eights inch rounded-edge aggregate) for local applications, which significantly cut down on transportation costs.

"Solid waste coordinators need to work with their county road and public works departments and through their county judges-executive to have end users in place before buying pulverizing equipment," Heil added. "It doesn't do any good to pulverize glass if it's just going to end up in a landfill."

If you have questions or would like to learn more about recycling in Kentucky, contact Heil at (502) 564-6716.

For more information about recycling programs, visit the Kentucky Recycling and Marketing Assistance (KRMA) Web site at http://www.kyenvironment.org/nrepc/dep/waste/programs/rcla/krmahome.htm

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Division gets new assistant director

by Matt Hackathorn, Division of Waste Management

In mid-July, the Kentucky Department for Environmental Protection (DEP) appointed Anthony R. Hatton as the new assistant director of the Division of Waste Management. Hatton filled the vacancy left by former Assistant Director Jeff Pratt when Pratt was promoted to the director of the Division of Water.

Hatton has vast environmental experience as a geologist working on hazardous waste, solid waste, underground storage tanks and Superfund projects. He previously worked in DEP's Hazardous Waste Branch as the project coordinator for the high-profile Paducah Gaseous Diffusion Plant cleanup.

"Tony fits in perfectly in his new capacity as assistant director," said Rob Daniell, director of the Division of Waste Management. "His technical knowledge, professionalism and leadership ability will certainly benefit this division and the Natural Resources and Environmental Protection Cabinet. He's the kind of leader who can make an immediate, positive impact on internal operations and ultimately on an improved Kentucky environment."

Hatton began working in the Hazardous Waste Branch as a project manager in the Corrective Action Section in January 1999. Prior to that he put in a short stint with South Carolina's Department of Health and Environmental Control (South Carolina's version of DEP), but the majority of his experience comes from the private sector.

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Anthony Hatton
Click on photo to see it enlarged.

From 1988 to 1998, Hatton worked as a consultant for a firm in Columbia, S.C., now called EarthTech Inc., where he earned valuable experience working in the southeast United States on Department of Defense (DOD)-related projects. During that time he also worked as a field geologist on several projects at one of the Department of Energy's (DOE) largest nuclear sites in Aiken, S.C., called the Savannah River Site.

Although DOD- and DOE-related issues have dominated his time over the last few years, Hatton achieved diverse experience in the private sector. A sampling of his work includes providing consultation on UST cleanups, designing drilling programs and initiating groundwater assessments for several landfill complexes throughout the southeast United States and coordinating corrective action on five different Superfund sites in South Carolina.

"I'm a solution-oriented manager," said Hatton. "I want to see some cleanup get done. That's the ultimate goal. I will encourage the regulatory staff here in the division to be 'thinkers' who apply common sense to regulation."

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Organizers begin preparations for the 2003 Commonwealth Cleanup Week poster contest

by Kerry Holt, Office of the Secretary

While it seems like Kentucky's school kids have barely had time to organize their lockers or ace their first spelling test, the 2002-03 school year is well underway. Organizers of the Commonwealth Cleanup Week (CCW) poster contest realize that time flies, and they are already making plans to distribute materials to area schools. The CCW poster contest is open to students in all Kentucky elementary and middle schools.

Students are asked to draw a message about keeping Kentucky clean and what young people can do to secure a better environment. Last year more than 75 poster entries were submitted, representing 36 counties. Posters go through a series of judging at various levels. Grand prize winners receive a $150 savings bond, a Commonwealth Cleanup Week T-shirt and Certificate of Achievement.

Teachers can look for a promotional poster, brochure and additional CCW information in early fall. Art and science teachers should have a registration packet delivered to them before students leave for Thanksgiving break. This packet contains everything a student needs to enter the contest including registration forms, guidelines and contest rules.

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Please remember that because of budget constraints and printing costs each school will receive only one packet. Additional packets are available online for downloading and printing at www.environment.ky.gov/nrepc/cabinet/cleanupposterkit.htm **.** Teachers are encouraged to make photocopies and share them with other interested educators.

If you are a parent of a student interested in submitting a poster or if you are a teacher who wants to get a headstart, the updated 2003 contest packet is on the Web and waiting for you. Please contact Kerry Holt at kerry.holt@mail.state.ky.us or (502) 564-2282 ext. 166, if you have further questions.

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October marks 30th anniversary of Clean Water Act

by Maleva Chamberlain, Division of Water

Thirty years after the Clean Water Act was established by Congress in 1972, the nation and the state are marking the anniversary by looking at what has been accomplished and what remains to be done.

Congress proclaimed 2002 as the "Year of Clean Water," and Gov. Paul E. Patton has proclaimed October as Clean Water Month in Kentucky.

The Kentucky Division of Water has developed a Web page with information on the history of the Clean Water Act in Kentucky, a calendar of events planned to recognize and celebrate Clean Water Month and a place to register events that are planned. See the Kentucky Web site at http://water.nr.state.ky.us/cwa/. See the "Year of Clean Water" Web site at http://www.yearofcleanwater.org.

Oct. 18 was set as National Water Monitoring Day across the nation. Volunteers in Kentucky will join those in other states to take samples of water from rivers and streams to get a "snapshot" of the state's and the nation's water quality.

Over the past 30 years in Kentucky, the Clean Water Act has helped create several notable successes.

- Because of requirements and funding set up by the act, water quality in Kentucky's 89,431 miles of streams has improved. In 1972, 71 percent of waterways could not support their designated uses, compared to 23 percent as reported in the 2000 Report to Congress on Water Quality (a document required under Section 305[b] of the act).

- Federal grants were made available for wastewater projects under the 1972 act. During the EPA grant program, 196 communities received more than $600 million in grants, resulting in more than $800 million in wastewater construction. Amendments to the act in 1987 shifted the grants program to a revolving loan fund (SRF). States received capitalization grants to seed the program and provided 20 percent matching funds. Since 1989, the Kentucky SRF has made 123 loan commitments to city and county wastewater authorities totaling $323 million, resulting in $426 million of constructed projects.

- Regionalization of wastewater facilities in several areas of the state has resulted in better service to residents and cleaner streams, made possible through funding set out by the act. Large amounts of grant funding were made available to projects in Owensboro/Daviess County, Crestwood and Madisonville.

- The act provides for control of discharges to the nation's waters through the National Pollutant Discharge Elimination System. Controlling direct discharges to waterways has resulted in vastly improved water quality. Kentucky has "primacy" for this program in the state through the Kentucky Pollutant Discharge Elimination System (KPDES). Anyone who discharges to waters of the Commonwealth must have a KPDES permit that spells out what contaminants must be controlled and at what levels. See this Web page for current numbers of KPDES permits: http://water.nr.state.ky.us/dow/dwover.htm.

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• The Mammoth Cave/Karst Area Water Quality Project was designed to reduce pollution in the Mammoth Cave Park area and the surrounding sinkhole plain. The Division of Water used $531,700 of funds from Section 319(h) of the act to support the project's water quality monitoring, technical assistance and demonstration farms.

• Nonpoint sources of pollution, those that don't come from a pipe, or "point," generally come from stormwater running across land and carrying various contaminants into waterways. This type of pollution is estimated to be responsible for two-thirds of Kentucky's impaired waters. These problems are addressed through the adoption of Best Management Practices (BMPs), which are encouraged through educational activities, technical assistance, financial assistance, training and watershed demonstration projects. The major source of funding to address nonpoint source pollution is through Section 319(h) of the Clean Water Act. More than $34.5 million in federal and state matching funds have been distributed among 243 individual projects in Kentucky since 1990.

Looking to the future, the biggest challenges for improving water quality now lie with tracing pollutants to activities that don't discharge, in other words, nonpoint source pollution. The public must want, demand and support changes in behavior that will reduce this pollution.

One way that you can show your support in Kentucky is to attend public hearings and public meetings. You can find out more by checking this Web site: http://water.nr.state.ky.us/dow/hrgnots.htm. You can also find out about draft discharge permits at http://water.nr.state.ky.us/dow/public.htm, or you can ask to be added to the division's mailing list of public notices that are sent both by e-mail and by regular mail as well as being posted on the Web.

You can get involved with a group in your watershed. Watershed Watch is a group of volunteers that take water quality samples and meet to discuss water quality problems. Each watershed has a conference once a year to review the year's sampling results and devise recommendations to forward to the Division of Water. Find out more at http://water.nr.state.ky.us/watch/. Each watershed also has a river basin team. You can attend meetings and find ways to become involved in their activities as well. See more at http://kywatersheds.org.

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Funds help establish watershed council

by Pamla Wood, Division of Water

A large watershed in northern Kentucky has received a $117,000 grant from the U.S. Environmental Protection Agency to help the Banklick Creek Watershed Council bring dignity, health and appreciation back to Banklick Creek. The council was formed to help deal with the challenges facing this watershed. It will seek to improve and protect the physical, chemical and biological integrity of Banklick Creek, its tributaries and watersheds through a variety of methods.

Since Banklick Creek begins in a rural area and flows into the heart of the northern Kentucky/Cincinnati urban area, it has many users and faces a multitude of problems. In its upper reaches in Boone and Kenton counties, Banklick runs through the narrow farming valleys and rapidly spreading sprawl of the northern Kentucky urban fringe. It is never far from roads, subdivisions or railroad. The entire watershed is in the water supply protection area for the Northern Kentucky Water Service District's intake, with more than five miles located in the "critical" protection zone.

Most of the area has sewer service, but the density of unsewered population remains high, and soils are not generally suitable for septic systems. During storm events, the waterway receives untreated sewage discharges from combined sewer system overflows. Bacterial counts in the waterways are high.

The density of impermeable surfaces (pavement and roofing), combined with slopes that vary from 2 percent - 30 percent (most in the 12 percent - 30 percent range), creates a significant challenge for stormwater management.

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Volunteers gather to be trained in habitat assessment procedures by scientists from the Daniel Beard Environmental Center and the Lexington Community College Environmental Technology Program.

Division of Water photo

Click on photo to see it enlarged.

The council's first stakeholder meeting in July drew representatives from more than 25 different agency and citizen groups that came up with an action list to begin making the council an effective force for watershed renewal in an urban setting. An open meeting with the public in October is next on the calendar to introduce residents to their watershed.

Banklick is receiving attention and financial support because it is a priority stream of the Licking River Watershed Management Framework.

For more information about the Banklick Watershed Council, see http://www.banklick.org. The council was initially established with grant money awarded by the Kentucky Waterways Alliance from a Nonpoint Source 319(h) grant from the Kentucky Division of Water. The grant is also funding watershed councils in the Sinking Creek, Harrods Creek, Little Laurel River, Mayfield Creek (Carlisle County), Eagle Creek and Cabin Creek watersheds. See more about the Kentucky Waterways Alliance's watershed councils and its other programs at http://www.KWAlliance.org.

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Riverbanks make a clean comeback

by Cindy Schafer, Office of the Secretary

Thirty-four Kentucky counties participated in this year's River Sweep. Nearly 119 miles of the river were covered, with volunteers collecting 99 tons of trash.

Consider the enormous volume of water that travels between the banks of the Kentucky River. Now think about the amount of trash and debris that can accumulate along the more than 400 miles of riverbanks that begin in Letcher County in eastern Kentucky and meanders to Carroll County where it empties into the Ohio River. Obviously, cleaning this body of water that sustains many daily needs is no small chore.

Consequently, the River Sweep was organized in 1991 by the Kentucky River Authority, when it decided to make an effort to clean up the banks of the Kentucky River and its tributaries. Since then, the River Sweep has been an annual event where volunteers gather to remove trash from the river.

Unsightly trash and debris are often caused by spring flooding and by indifferent citizens deliberately leaving items behind. Regardless of how it gets there, the trash needs to be removed since so many individuals depend on the river for drinking water.

For the second consecutive year, Bob Rasmusson, Madison County solid waste coordinator and River Sweep coordinator, organized the event for Madison and Clark counties. Area volunteers gathered at Ft. Boonesborough State Park, where they donned "Sweep" T-shirts and gloves in preparation for a day of collecting garbage from the park beach area. "Every year it gets better and better," said Rasmusson. "Part of it is because people are more conscious about their trash, but it's also because these people get together and take ownership of the river."

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More than 150 people participated at the Ft. Boonesborough State Park beach cleanup event.
Click on photo to see it enlarged.

Volunteers loaded garbage taken from the beach area onto dump trucks and boats provided by area businesses and clubs for the event.
Click on photos to see them enlarged.

Photos and statistics provided by Bob Rasmusson

Volunteers picked up tons of debris by hand, boat and dump truck. Aside from the normal assortment of household appliances, plastic bottles and aluminum cans, a commode was hauled away, along with 25 tires. In all, more than 200 people participated in the two-county event, collecting 7.5 tons of trash at four different cleanup sites including Ft. Boonesborough beach.

"It was a very successful day," said Rasmusson. "Less trash was found by all, and that means the river sweeps are working."

Volunteers were treated to a cookout and refreshments following the cleanup event.

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Kentucky firefighters involved in rescue

by Gwen Holt, Division of Forestry

Kentucky Division of Forestry and National Park Service firefighters will always remember July 28, 2002, as a tragic day. On assignment in California, they were fighting a fire in the Klamath National Forest when an accident occurred. They watched in horror as a pumper truck and its crew assigned to help them with the fire plummeted a thousand feet over the side of a narrow mountain road, rolling over several times.

The Kentucky crew of firefighters quickly took action. They used their radios to make contact with necessary personnel to dispatch additional help and medical assistance and immediately began climbing down the steep slope to conduct rescue and recovery efforts. The crew administered first aid until medical assistance arrived. Sadly, three of the five Lassen National Forest crew members did not survive the accident. The remaining two members suffered serious injuries and were airlifted to a nearby hospital.

The U.S. Forest Service provided grief counseling to the entire Kentucky crew and offered to send them home. However, they all stayed in California and returned to the fire line three days later. These brave firefighters were awarded a plaque and a certificate of appreciation for going above and beyond the call of duty.

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Kentucky Division of Forestry and U.S. Forest Service crew were recognized for their rescue and recovery efforts.

Photo by Bridget Abernathy
Click on photo to see it enlarged.

"We are extremely proud of these courageous firefighters and the efforts they made to save their comrades. Our condolences go out to the families and coworkers of these fallen firefighters. This tragedy emphasizes just how dangerous wildland firefighting is," said Leah MacSwords, director of the Division of Forestry.

The U.S. Forest Service is conducting a full investigation to determine the cause of the accident.

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Cabinet levies penalties, damage costs of slurry spill

The largest coal slurry spill in the state has resulted in the largest coal-related fine and penalty in Kentucky's history.

by Mark York, Office of the Secretary

The Natural Resources and Environmental Protection Cabinet and Martin County Coal Corp. (MCCC) have reached an agreement related to the slurry spill in October 2000.

MCCC signed the $3.25 million order in July, settling the case involving citations from the Department for Surface Mining Reclamation and Enforcement and the Division of Water.

The order signed by James E. Bickford, secretary of the cabinet, contained civil penalties of $1,750,000, damages to Kentucky's environment of $1 million and response costs incurred by the cabinet of $500,000.

A portion of Coldwater Fork after the slurry spill occurred in October 2000
Click on photo to see it enlarged.

Coldwater Fork in May 2002 after slurry removal.
Click on photos to see them enlarged.

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More than 250 million gallons of slurry escaped from a company impoundment in the early morning hours of Oct. 11, 2000. The material discharged into underground mine works before flowing into Coldwater Fork and Wolf Creek, making its way into Tug Fork, a tributary of the Big Sandy River. Material was washed into the Big Sandy and then into the Ohio River.

The citations against MCCC included polluting the waters of the Commonwealth, releasing hazardous substances, creating an environmental emergency and engaging in an unsafe practice. The company appealed the enforcement actions from the cabinet, and a hearing had been set for September.

In addition to the monetary terms, the agreed order directs the company to close and reclaim the Big Branch Slurry Impoundment and remediate and restore as necessary the streams damaged by the slurry so they can meet water quality standards. The company is also required to obtain permits and post bonds for the areas where slurry from the cleanup operation is stored.

Wolf Creek awash in slurry, which is a mixture of coal and rock dust, rock, slate, clay and water consistent with the texture of web concrete.

Wolf Creek as it appears today since slurry removal took place
Photos provided by Department for Surface Mining Reclamation and Enforcement
Click on photo to see it enlarged.

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UK pasture research on reclaimed mine lands

by Camille Stewart, Department for Surface Mining Reclamation and Enforcement

The University of Kentucky College of Agriculture staff has received numerous questions over the years concerning the use of reclaimed surface coal-mined land for beef cattle production. "The questions all lead to what are the best management practices for sustainable cattle production?" said Mike Collins, UK professor of agronomy.

In response, a project was initiated to evaluate beef cattle management practices on a surface mine site in eastern Kentucky. Mine sites were chosen that had Phase 1 Bond Release status, which is defined as having been regraded to approximate original contour and revegetated. Conducting the research on a real reclamation mine site allowed researchers to use today's reclamation methods and achieved a cost savings for the program.

The Research

The study was conducted on Pine Branch Coal Sales land in Perry County. The owner, the late Don Duff Sr., was not only a coal miner but a farmer as well. Before his death he created D&D Ranch, which includes more than 400 acres of reclaimed mine lands. Because of the location, size and cooperation of this family-owned coal company, this site was a natural for the project.

Setting up a research program involves first asking questions and then creating a plan to test the questions that allow the results to be validated. Statistical analysis is used to prove that the results of a research study are valid or meaningful.

"Basically 375 acres of the reclaimed land was divided into duplicate plots of 30, 60 and 90 acres for the field testing. Each pasture was stocked with 10 cow/calf pairs," said Dr. David Ditsch, UK associate professor of agronomy. The animals stayed in the plots 365 days per year throughout the test period. A control plot was also monitored with the same standards but did not receive any maintenance or cattle grazing to determine the effect of the animals compared to natural environmental influences. Each plot received equal reseeding and revegetation before the cattle were put into the pastures. It was decided that the best way to determine if a mine site could sustain a constant cattle operation was to use a minimal maintenance approach. The cattle were regularly checked and treated by a veterinarian and were fed hay in the winter. Pasture maintenance was limited to an annual mowing in mid-summer. However, the control plots were not mowed.

Extensive Geographic Information Systems (GIS) mapping was conducted, and UK staff routinely measured soil acidity, growth and condition of ground cover. (See a **pasture map** that shows the actual layout of individual plots.) The measures were taken at the same point on each acre of the research area, and a vast amount of data collected shows how the soils and vegetation changed over time.

The vegetation consisted of grasses and legumes. The grass was predominately endophyte-infected Kentucky 31 fescue. Legumes included sericea Lespedeza, birdsfoot trefoil and several varieties of clover.

The Results

The cows were bred to produce calves in the spring. Generally, endophyte (infected) fescue is connected with a reduced calving rate. However, this has not been the case on the reclaimed mined land as 80 to 90 percent conception rates were

observed. The reclamation seed mixture required on the mining permit contains a higher percentage of legumes than found in most farmers' fields. The nutrition from the legumes most likely contributed to the higher conception rate.

The grazing was also a benefit to the legumes. Grazing kept the legumes short, and as the researchers say, "in a fresh state." The fresh state is very important for the lespedezas, making it a more palatable and higher nutritional feed for the cattle.

Vegetation measurements were taken on high-, medium- and low-stocking density plots. Data indicated that the cattle consistently used only portions of the pasture on the low-stocking plots, which did not keep the legumes fresh. The medium-stocking density plots provided the best overall rate of gain, quality and sustainablility of vegetation.

The UK College of Agriculture is preparing a management guide to assist farmers in utilizing reclaimed mine lands. A few of the recommendations are:

- Fencing pastures strategically to force the cattle to graze less desirable areas.
- Leaving the flatter (level) areas for hay production.
- Constructing strategically placed water sources during reclamation to provide water for future grazing.

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Cows graze on the reclaimed mine site for 365 days per year throughout the test period.
Click on photo to see it enlarged.

This farm pond is a good water source for the cattle and was constructed during the reclamation process.
Click on image to see it enlarged.

Prior to mining, D&D Ranch hilltops were steeply sloping with shallow, infertile soils that supported a second-growth

forest. The post-mining configuration resembles a plateau with terraced-side slopes and several water impoundments.
Photos by UK
Click on photo to see it enlarged.

The Summary

The permitting and enforcement regulations promulgated by Public Law 95 –87 are shaping the future of the Kentucky coal fields. Surface mined land reclaimed to forage species is a significant resource for grazing livestock.

Sustainable agriculture has been a common phrase since the conservation movement became a public issue in the 1960s. Through the efforts of UK and visionaries in business, like Don Duff Sr., this research has demonstrated that reclaimed surface mining land can be successfully used to produce adequate feed for farm animals and a source of sustainable income for the people in the coal fields.

Visit the Department for Surface Mining Reclamation and Enforcement's Web site for more detailed information at http://www. kyenvironment.org/nrepc/dsmre/NRDSMRE/dsmremay13/post_ miningland_ use.htm

"Best management of reclaimed mine lands can create a sustainable agriculture for the Appalachian Region."
Mike Collins, UK professor of agronomy
Click on photo to see it enlarged.

UK's Web site http://www.uky.edu/Agriculture/Agronomy/Forage/ has a wealth of information to help farmers develop a best management plan.

The Law

Kentucky Surface Mining Reclamation Laws require the permittee to achieve post mining land use (PMLU) as defined in the regulations. The PMLU for each mine is determined during the premining permitting process. Based on the configuration of the final grading and its size, the permit may support more than one PMLU. For instance, the steep slopes may be planted with trees and flat areas with grass. Each land use establishes production requirements that must be demonstrated in order to achieve final bond release. The department considers a permit reclaimed when the requirements dictated by law and regulation are met.

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